TABLE 1 – SCHOOL BUS (CNG)

The Lower Merion School District, located in Ardmore, Pa, a suburb of Philadelphia, operates a fleet of 94 school buses of which 51 are powered by compressed natural gas (CNG). The District s CNG program slowly began to take form in 1993, but the real thrust of the program came in the spring of 1996 when the District opened its first CNG fueling station while also taking delivery of 26 dedicated CNG school buses. As of April 1999 the District s CNG fleet has logged more than 1.3 million miles.

Lower Merion School District decided to switch from diesel power to CNG power in response to community concerns about the noise and pollution generated by the District s school bus fleet which is housed in a facility located in a quiet, residential neighborhood. The District was searching for a way to make its fleet as acceptable as possible to its immediate neighbors who considered the fleet a nuisance. At one point the District seriously considered relocating the fleet to a more industrial type setting but that option proved impossible because of the lack of an acceptable site within the District. The District did however, subsequently move 25 buses to another site adjacent to Harriton High School, one of the District s two high schools. While that action did alleviate some congestion at the original site, the move was not well received by the neighbors at the second site.

Concurrent with this attempt to relocate the fleet, information concerning two major pieces of environmental legislation began circulating through the fleet world. The Clean Air Act Amendments of 1990 and the Energy Policy Act contained legislation that addressed the use of alternative fuels in fleet operations. The legislation, among other things, mandated that fleets begin purchasing vehicles operated by alternative fuels. While the specifics of the vehicle mandates are still under debate as to which fleets are covered by the mandates, the legislation did provide for incentive grants for those fleets purchasing alternative fueled vehicles prior to any mandates. This provision of the law was of the most interest to Lower Merion and the District began to explore the possibility of switching to an alternative fuel as a means of reducing noise and pollution generated by its fleet.

District personnel began to research the feasibility of various alternative fuels. It soon became apparent that CNG was the alternative fuel offering the best combination of economy, pollution reduction, and product offerings. Visits to other school bus fleets operating CNG school buses provided further evidence of the viability of CNG as a fuel for school bus operations. As a demonstration project, the District first converted two pickup trucks to CNG. The local gas utility, PECO Energy, paid for the conversions and supplied a FUELMAKER brand fueling station for refueling purposes. The District then applied for and was subsequently awarded a $15,000 grant from the U.S. Department of Energy to apply toward the purchase of a CNG school bus. In October 1995 the District purchased and began operating a dedicated CNG Thomas Built school bus which was fueled at a local gas utility fueling station.

By this time, the District had delayed the much needed replacement of buses while deciding which direction the fleet would take regarding alternative fuels. Between the time the District began researching alternative fuels and the time the District actually purchased a CNG school bus, the natural gas vehicle industry moved from an obscure niche market into the mainstream. CNG school buses were well established in California which has the most stringent environmental regulations in the nation. More and more major engine manufacturers were developing natural gas engines. Both Blue Bird and Thomas were offering CNG school buses in a choice of engines. John Deere had developed a state-of-the-art CNG engine which could compete with diesel for performance and economy. Each month, publications such as School Transportation News, School Bus Fleet, Fleet Equipment, and others featured

articles on CNG as an alternative fuel. Arguably, compressed natural gas had taken a lead position as the alternative fuel of choice.

Based on the District s limited but successful experience with CNG, the experience of other fleets, product offerings, and the District s assessment that CNG was, at least in the near future, the alternative fuel with the most promising future, a decision was made to finally replace 26 aged school buses with CNG school buses. Concurrent with the research and decision-making process the District had applied for two separate grants in anticipation of a decision. A $225,000 grant for construction of a fueling station and a $282,000 grant for the purchase of school buses were awarded. Construction of the fueling station was completed in late spring of 1996 and the new buses arrived shortly thereafter. Delivery of the buses was timed for early summer in order to provide the District s mechanics adequate time to familiarize themselves with the equipment. The buses received limited use during the summer months but enough to demonstrate the reliability of the fueling station and the engines.

The 1996-97 school year began with the buses performing to the District s expectations. The District was so pleased with the performance of the buses a decision was made to purchase 16 additional buses which were delivered in time for the opening of the 1997-98 school year. The District received an additional grant of $241,500 which was applied toward the purchase price of these buses. Based on two years of successful operation the District decided to purchase an additional eight CNG buses which were delivered in time for the opening of the 1998-99 school year. The District also decided to construct a second CNG fueling station which would service the needs of the buses parked at the Harriton High School location. Construction of the second fueling station began in the spring of 1998 and the station went into operation in October 1998. Another grant of $190,280 was awarded for construction of the fueling station. The District has ordered an additional seven CNG buses which will begin service in the 1999-00 school year. The District will begin the 1999-00 school year with 58 CNG school buses in operation.

By October 1998 the District s CNG fleet had logged more than one million miles. In April 1999 that portion of the District s fleet powered by the John Deere 8.1 liter CNG engine (43 buses) had logged one million miles. Since beginning operations the District s two CNG fueling stations have dispensed more than 270,000 gasoline gallon equivalents (GGE s) of natural gas.

The District considers its CNG program to be a success. That success is measured by the fact the buses reliably fulfill their daily mission, the fueling stations have proven dependable, the drivers rave about the buses, the mechanics have become more knowledgeable and confident with each passing day, and by the substantial improvement in air quality at the fleet s facility.

The District is proud of its leadership role and contribution to the development of the alternative fuels market. The use of alternative fuels has allowed the District to address a local environmental concern while also demonstrating the viability of CNG as an alternative fuel in school buses. The District fleet has also provided John Deere Power Systems a unique real world laboratory in which to test and further refine its line of CNG engines.